

CLAIMS

What is claimed is:

- 5 1. A shock force indicating device comprising:
a base member having a substantially flat top surface;
a top member having a raised portion disposed in spaced relation
above said base member forming a cavity between said top member and said
base member;
- 10 a bearing disposed within said cavity; and
a pressure sensitive material disposed on said base member;
wherein movement of said bearing over said pressure sensitive
material produces a visually identifiable path on said pressure sensitive
material tracing movement of said bearing when said bearing moves in
15 response to a shock force on said device.
2. The shock force indicating device according to claim 1, wherein
said base member and said top member provide a compressive force to said
bearing such that said bearing is held in place until said device is subjected to
20 a shock force greater than a predetermined threshold.
3. The shock force indicating device according to claim 1, wherein a
bottom surface of said base member comprises an adhesive backing.
- 25 4. The shock force indicating device according to claim 1, wherein
said bearing has an initial starting position which is substantially centered
within a plane of said base member within said device between said base
member and said top member.

5. The shock force indicating device according to claim 2, wherein said top member has a substantially flat top portion.

5 6. The shock force indicating device according to claim 2, wherein said top member is dome-shaped.

7. The shock force indicating device according to claim 1, wherein said bearing is disposed within an indentation in said base member under an initial condition, said bearing traveling out of the indentation when said device is subjected to a sufficient shock force.

10

8. The shock force indicating device according to claim 1, further comprising a spring, one end of said spring being connected to the base member, an other end of said spring being connected to said bearing, said spring adapted to allow a predetermined amount of movement of said bearing when said device is subjected to a shock force of a particular magnitude.

15

9. The shock force indicating device according to claim 8, wherein said bearing and said spring are formed from a single piece of an elastic material.

20

10. The shock force indicating device according to claim 1, further comprising an elastic member, one end of said elastic member being connected to said base member, an other end of said elastic member being connected to said bearing, said elastic member adapted to extend to allow movement of said bearing when said device is subjected to a shock force of a particular magnitude.

25

11. The shock force indicating device according to claim 1, wherein said pressure sensitive material is pressure sensitive paper.

5 12. The shock force indicating device according to claim 11, wherein said pressure sensitive paper is carbon paper.

13. The shock force indicating device according to claim 1, wherein said top member is substantially transparent.

10 14. The shock force indicating device according to claim 1, wherein said base member comprises indicating marks representing a scale with which to measure a component of a shock force on said device.

15 15. The shock force indicating device according to claim 14, wherein said indicating marks are substantially concentric circles.

16. The shock force indicating device according to claim 1, wherein said device has a substantially circular perimeter.

20 17. A shock force indicating device comprising:
a base member;
a top member having a raised portion disposed in spaced relation above said base member forming a cavity between said top member and said base member;
25 a bearing disposed within said cavity; and
a pressure sensitive material disposed on said base member;
wherein movement of said bearing over said pressure sensitive material produces a visually identifiable path on said pressure sensitive

material tracing movement of said bearing when said bearing moves in response to a shock force on said device; and

5 wherein said base member comprises a plurality of concentrically arranged raised ridges, said bearing traveling over a number of the spaced apart ridges when subjected to a shock force, the number of spaced apart raised ridges said bearing travels over being determined by the extent of a shock force on said device.

10 18. A shock force indicating device comprising:
a base member having a substantially flat top surface;
a top member having a raised portion disposed in spaced relation above said base member forming a cavity between said top member and said base member; and
a bearing disposed within said cavity;
15 wherein said bearing is formed of a material capable of visually marking said base member such that said bearing traces a path which has a length corresponding to a base component of a force applied on said device.

20 19. The shock force indicating device according to claim 18, wherein said base member and said top member provide a compressive force to said bearing such that said bearing is held in place unless said device is subjected to a shock force greater than a predetermined threshold.

25 20. The shock force indicating device according to claim 18, further comprising a spring, one end of said spring being connected to the base member, an other end of said spring being connected to said bearing, said spring adapted to allow a predetermined amount of movement of said bearing when said device is subjected to a shock force of a particular magnitude.

21. The shock force indicating device according to claim 20, wherein said bearing and said spring are formed from a single piece of an elastic material.

5 22. The shock force indicating device according to claim 18, further comprising an elastic member, one end of said elastic member being connected to the base member, an other end of said elastic member being connected to said bearing, said elastic member adapted to extend to allow movement of said bearing when said device is subjected to a shock force of a
10 particular magnitude.

 23. The shock force indicating device according to claim 18, wherein the base member has indicating marks representing a scale with which to measure a component of a shock force on said device.

15 24. A shock force indicating device comprising:
 a channel having channel walls which narrow in width along a length of the channel; and
 a bearing disposed within said channel;
20 wherein said bearing will travel a predetermined distance when said device is subjected to a shock force of a particular magnitude; and
 wherein the further said bearing is from a starting point within the channel, the greater the amount of force which is necessary to move said bearing a particular distance.

25 25. The shock force indicating device according to claim 24, wherein said shock force indicating device further comprises a mechanism which aligns the channel longitudinally in a direction of the shock force upon sensing such a shock force.

26. The shock force indicating device according to claim 24, wherein said channel comprises indicating marks representing a scale with which to measure a component of a force applied to said device.

5

27. A system for measuring the extent of shock to a device in multiple directions comprising:

an article having at least two non-parallel sides;

at least two shock force indicating devices, each of said devices
10 comprising

a base member having a substantially flat top surface,

a top member having a raised portion disposed in spaced
relation above said base member forming a cavity between said top member
and said base member,

15 a bearing disposed within said cavity, and

a pressure sensitive material disposed on said base member,

wherein movement of said bearing over said pressure sensitive material
produces a visually identifiable path on said pressure sensitive material tracing
movement of said bearing when said bearing moves in response to a shock
20 force on said device;

wherein said devices are placed at multiple locations on said article
such that a shock force in any direction will register a base component on at
least one of said devices.

25 28. The system according to claim 27, wherein said base member and
said top member provide a compressive force to said bearing such that said
bearing is held in place until said device is subjected to a shock force greater
than a predetermined threshold.

29. The system according to claim 27, wherein each of said shock
force indicating devices further comprises a spring, one end of said spring
being connected to the base member, an other end of said spring being
connected to said bearing, said spring adapted to allow a predetermined
5 amount of movement of said bearing when said device is subjected to a shock
force of a particular magnitude.

30. The system according to claim 29, wherein said bearing and said
spring are formed from a single piece of an elastic material.

31. The system according to claim 27, each of said devices further
comprising an elastic member, one end of said elastic member being
connected to the base member, an other end of said elastic member being
connected to said bearing, said elastic member adapted to extend to allow
15 movement of said bearing when said device is subjected to a shock force of a
particular magnitude.

32. The system according to claim 27, wherein said base member
comprises indicating marks representing a scale with which to measure a
20 component of a force applied on said device.